Lesson Printables

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Lesson Information Sheet: 2

Sunlight Zone
Activity: 3
Optional Place Value Table: 4

Twilight Zone
Activity: 5
Optional Place Value Table: 6

Midnight Zone
Activity: 7
Optional Place Value Table: 8

Let's explore place value

Why learn this?

In order for students to develop a conceptual understanding of numbers, they must understand the value of each digit in a number. Using place value knowledge and visual representations (ones, tens, hundreds, etc.) will show students that numbers are much more than simple digits, as each digit has its own value. Understanding the characteristics of odd and even numbers will help students to further develop their maths skills. When being introduced to division, students will see that odd numbers can not be divided by 2, unlike even numbers. Knowing this will make division easier for students.
Note, we have used the term 'ones' to indicate the place value column with the smallest value in this lesson. You might wish to use the term 'units' if it is more applicable to your location.

What is place value? How do you identify an odd or even number?

Identifying place value columns
- Place value columns help us identify the value of each digit in a number.
- There are infinite place volume columns. For this lesson, we will work with the ones, tens, hundreds and thousands columns.
  - ➔ In this lesson, the ones column has the least significant value and the thousands has the most significant value.
    - ◆ 1 one = 1
    - ◆ 1 thousand = 1,000
- Each place value column is 10 times greater than the column to the right. This connection will be useful at a later date when multiplying and dividing numbers by 10, 100, etc.
  - ➔ 1 ten = 10 ones
  - ➔ 1 hundred = 10 tens
  - ➔ 1 thousand = 10 hundreds

Identifying odd and even numbers
- Identify the digit in the ones place value column.
- Draw 2 circles and then draw the amount of dots that match the digit in the ones column, alternating between circles.
  - ➔ If there is an equal number of dots in both circles, the number is even.
  - ➔ If there isn't an equal number of dots in both circles, the number is odd.

Let's warm up!

Starter Activity - **On Target**
Students are challenged to make the target number 20 using any of the numbers provided in the coloured boxes. Students could use many different number sentences to make the target number and any operation.

To support, students could:
- Work through an example with an adult. E.g. 12 + 8 = 20 or 9 + 1 + 6 + 4 = 20
- Use the same number more than once in the same number sentence. E.g. 5 + 5 + 5 + 5 = 20.
- Work together to share ideas and get inspired.

To challenge, students could:
- Explore how many different ways they can make the number 20.
- Try to use all 4 operations (addition, subtraction, multiplication and division) to make the target number.

Let's do this!

Main Activity - Students are given a Gotcha challenge sheet. Students should flip over cards to make their learning zone and make a multi-digit number. Does the number match any of the Gotcha place value challenges? Students can fill in one number per round. Their aim is to fill in all of the challenges before reaching the end of the deck. (Note, this is not a requirement. It just an opportunity to add chance and jeopardy into the activity.) Note, this game could be turned into a competitive game if you have two players. The rules are the same. The only different is the goal is to be the first player to knock off all of the challenges.

To support, students could:
- Work with 3-digit numbers. See Sunlight Zone.
- Use the place value charts found in the printables to line up their playing cards.

To challenge, students could:
- Work with 5-digit numbers.
- Make the game tactical. Once students have flipped over all of their cards, they can move them around to create their own number. E.g., Cards 1, 2, 3 and 5 could be used to make 3,512 so they can knock off the even Gotcha challenge.

Sunlight Zone

1. Grab a deck of playing cards.
   ➔ Remove 10s, Jacks, Queens and Kings. Aces = 1.
2. Flip over 3 cards and make a 3-digit number.
3. Look at the Gotcha challenges below.
   ➔ Can you knock off a challenge?
   ➔ You can only knock off one challenge per turn.
4. Is it possible to knock off all of the Gotcha challenges before reaching the end of the deck?

Gotcha Challenges (The number must…)	**My Number**	**Proof**
be odd		
be even		
have a tens digit that is double the ones digit		
have an even number in the hundreds spot		
have an odd number in the tens spot		
have repeating digits		
have 5 hundreds		
have a ones digit that is smaller than all of the other digits		

Challenge: Match numbers to place value criteria.
Excellence: Explain why your number meets the criteria.
Legend: Make the game tactical. You can move the cards around to make any number you want with the digits that you have.

Place Value Chart

Hundreds	Tens	Ones

Twilight Zone

1. Grab a deck of playing cards.
   ➔ Remove 10s, Jacks, Queens and Kings. Aces = 1.
2. Flip over 4 cards and make a 4-digit number.
3. Look at the Gotcha challenges below.
   ➔ Can you knock off a challenge?
   ➔ You can only knock off one challenge per turn.
4. Is it possible to knock off all of the Gotcha challenges before reaching the end of the deck?

Gotcha Challenges (The number must…)	**My Number**	**Proof**
be odd		
be even		
have a tens digit that is double the ones digit		
have an even number in the thousands spot		
have an odd number in the tens spot		
have repeating digits		
have digits in the thousands and tens that add up to 8		
have a ones digit that is smaller than all the other digits		

Challenge: Match numbers to place value criteria.
Excellence: Explain why your number meets the criteria.
Legend: Make the game tactical. You can move the cards around to make any number you want with the digits that you have.

Place Value Chart

Thousands	Hundreds	Tens	Ones

Midnight Zone

1. Grab a deck of playing cards.
   ➔ Remove 10s, Jacks, Queens and Kings. Aces = 1.
2. Flip over 5 cards and make a 5-digit number.
3. Look at the Gotcha challenges below.
   ➔ Can you knock off a challenge?
   ➔ You can only knock off one challenge per turn.
4. Is it possible to knock off all of the Gotcha challenges before reaching the end of the deck?

Gotcha Challenges (The number must…)	**My Number**	**Proof**
be odd		
be even		
have a tens digit that is double the ones digit		
have an even number in the thousands spot and an odd number in the ten thousands spot		
have an odd number in the tens spot		
have repeating digits		
have digits in the ten thousands and tens that add up to 8		
have a ones digit that is smaller than all the other digits		

Challenge: Match numbers to place value criteria.
Excellence: Explain why your number meets the criteria.
Legend: Make the game tactical. You can move the cards around to make any number you want with the digits that you have.

Place Value Chart

Ten Thousands	Thousands	Hundreds	Tens	Ones